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The Benefits and Challenges of Interprofessional Education Assessment for Health Care Professionals

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Interprofessional education (IPE) fosters effective team-based collaborative practice among members of different health care professions to advance high-quality and safe patient care. Although the importance of IPE has been recognized and IPE initiatives have expanded rapidly in the past decades, substantial difficulties in IPE assessment still exist. At present, a lack of consensus on the optimal approach to IPE assessment contributes to uncertainty about the level of attainment of collaborative team performance. This paper aims to provide an overview of the benefits and current challenges associated with IPE assessment. Furthermore, a multifactor model with an assessment matrix and assessment blueprints from a recent study is briefly discussed. We also provide examples of assessment blueprints for the team management of stroke patient discharge covering a competency examination at the levels of individuals, the team, and the task.

Keywords: Interprofessional education, Interprofessional collaboration, Assessment matrix, Assessment blueprint

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INTRODUCTION

The delivery of high-quality and safe health care services requires interprofessional collaboration (IPC), as manifested by a multidisciplinary team that works in a collaborative and integrated manner to achieve optimal health outcomes [1,2]. Mayo has advocated IPC since its earliest days, and its philosophy of team-based care was stated as follows [3]:

“The sum-total of medical knowledge is now so great and wide-spreading that it would be futile for one man to attempt to acquire, or for any one man to assume that he has, even a good working knowledge of any large part of the whole. The very necessities of the case are driving practitioners into cooperation. ... It has become necessary to develop medicine as a cooperative science; the clinician, the specialist, and the laboratory workers uniting for the good of the patient, each assisting in elucidation of the problem at hand, and each dependent upon the other for support.” (William J. Mayo, 1910)

In the past decades, growing evidence has emerged demonstrating the role of interprofessional education (IPE) in

underpinning the improvement of IPC and patient care [4,5]. Numerous IPE activities have been designed and embedded into profession-specific core curricula in health care academic institutions at the pre-licensure stage, such as an IPE curriculum that spans the entire length of health science professional degree programmes at the University of Toronto [6]. Substantial IPE initiatives have also been implemented in clinical practice at the post-licensure stage, in contexts such as diabetes care [7], mental health care [8], and stroke rehabilitation [9]. As categorised by Barr et al. [10], there are various learning and teaching approaches in IPE, including exchange-based learning, action-based learning, practice-based learning, simulation-based learning, observation-based learning, e-based learning, and received learning. In academic settings, received learning or didactic teaching is predominant, with lectures or presentations delivered to learners in classrooms. In the meantime, learners may also have opportunities to participate in simulated laboratory situations with a multidisciplinary team.

The importance of IPE has recently been reinforced by the World Health Organization via its Framework for Action on Interprofessional Education and Collaborative Practice [11]. Given the increasing emphasis on IPE, the assessment of IPE has become an essential but challenging task. To date, there is no

consensus on IPE assessment in the literature in terms of assessment techniques and IPE outcome measures [12]. This situation is largely attributable to the complex and multifaceted nature of the health care system. This paper aims to offer an overview of the benefits of and challenges to IPE assessment. In addition, the use of a multidimensional model with an assessment matrix and assessment blueprints for IPE is discussed.

BENEFITS OF INTERPROFESSIONAL EDUCATION ASSESSMENT

It is not surprising that many health care professionals deem IPE less important than their profession-specific learning. This perception hampers learners' engagement in and commitment to IPE. To help reduce the negative effects of this stereotyping, IPE assessment can serve as an avenue to convey the significance of IPE to all stakeholders and give IPE equal weight to profession-specific education.

There is a plethora of research showing that assessment drives learning and influences learning experiences [13,14]. The inclusion of an IPE assessment will indeed change learners' attitudes and spur their aspirations for learning. Moreover, the assessment in itself gauges what learning has taken place, which facilitates further learning and increases the authenticity of IPE. In general, IPE assessment plays an important role for the following reasons [15,16]: (1) It documents and measures learners' progress related to their IPE learning journey; (2) It gives more details of and insights into team members' learning experiences; (3) It provides feedback on the effectiveness of teaching strategies; (4) It enables team members to reflect on the objectives and expectations of the programme.

Frequently, summative and formative assessments are utilized in IPE to promote learning and measure learning outcomes. A summative assessment usually occurs at the end of the course or programme to measure learners' achievements against established standards, whereas a formative assessment is a process that takes place amidst instruction to provide feedback on learners' progress. The information obtained from assessments will help educators to adjust their teaching method and map next steps to maximise learning outcomes for varied learners, as well as for the class as a whole.

CHALLENGES TO INTERPROFESSIONAL EDUCATION ASSESSMENT

As described above, there are different types of learning approaches in IPE, which requires us to clearly define the corresponding constituent elements in assessments. This is challenging, as different assessment methods need to be identified to match the various learning approaches. Moreover, there are intrinsic challenges in IPE that we need to specifically focus on to ensure effective and feasible IPE assessments.

1. Intraprofessional or uniprofessional assessment is a tradition

Assessments of individual competency are still predominant in health care, especially for assessments of pre-licensure health care professional students for certification purposes [12]. Many professional accreditation agencies have mandates only regarding their own profession and require students to be assessed by members from that profession [12]. With the development of IPE, it is necessary to transform the assessment approach from the traditional individual-based pattern and to develop new techniques focusing on the collaborative performance both of individuals and of the whole team.

2. Variety of professional teams in clinical settings

IPE occurs in different settings with different levels of cooperation, coordination, and collaboration among professions in the course of delivering patient-centred care [17]. In order to conduct appropriate IPE assessments, we need to understand the composition of interprofessional teams and the nature of collaborative practice in each setting.

1) Multidisciplinary team

A multidisciplinary team refers to a group of health care professionals who provide different patient care services in a coordinated and seamless way. For example, in the Lifestyle Improvement and Fitness Enhancement Centre in Singapore General Hospital, endocrine doctors, bariatric surgeons, nurses, psychologists, dietitians, physiotherapists, occupational therapists, and medical social workers work together to provide focused care for patients in a single centre or ward. Regular team meetings are held to discuss and reflect on the management of patients as a team.

2) Interdisciplinary team

An interdisciplinary team is defined as a group of health care professionals from diverse fields who work in a coordinated workgroup to decide care pathways, working toward a common goal for patients. The workgroups are intentionally created and relatively small, with a shared responsibility for a patient or group of patients. Examples of interdisciplinary teams are rapid response teams, palliative care teams, primary care teams, operating room teams, stroke rehabilitation teams, and transplant teams.

3) Transdisciplinary team

A transdisciplinary team is composed of members of a number of different professions cooperating across disciplines to improve patient care through practice or research [18]. In transdisciplinary teams, members (doctors, nurses, therapists, etc.) have complementary skills so that they can take on corresponding roles to deliver patient care within the team.

3. Team mix

It is obviously crucial to establish team norms in terms of appropriate team size and an equal mix of different health care professionals to ensure effective interprofessional interactions. Physicians and nurses are generally consistent participants in interprofessional teams. In contrast, the involvement of allied health professionals requires much more planning and discussion to make sure that the programme has elements for them to participate in and learn from. Team members' expertise and years of experience also impact the effectiveness of interprofessional teamwork. If the gap in knowledge and experience is too wide, some team members may participate less and consequently hinder the overall team performance [19]. In addition, IPC can be

discouraged by social or bureaucratic cultural structures that often exist in interprofessional teams in both academic and clinical environments [20,21]. The IPE assessment should break down the hierarchical structure and consider the different roles and responsibilities that each member plays in the team.

4. Assessment tools

At present, most IPE assessments rely on self-reported questionnaires and scales, which only provide learners' perceptions of learning outcomes. Conceptually, self-reporting has validity and veracity concerns, which make it difficult to use this technique to confirm whether learning has taken place. However, assessment tools developed for measuring individual competency may not be applicable in the context of a team, except for the assessment of generic or core knowledge and skills, such as knowledge of basic life support techniques and infection control. Another key question in IPE assessment is whether the team should be assessed using a formative or summative approach. Studies on effective summative assessment tools are limited. To date, there are only a few tools available in the literature for IPE assessment, such as the interprofessional collaborator assessment rubric [22], the interprofessional team objective structured clinical examination [23,24], and the interprofessional teamwork observation and feedback tool [25].

A RECOMMENDED MODEL FOR INTERPROFESSIONAL EDUCATION ASSESSMENT

Given the challenges in IPE assessment, Simmons and colleagues have recently developed a multifactor model to assess IPE, focusing on team structure, team function, and outcomes

Table 1. Assessment matrix

Who	How	What	Why	Assessment	Example
Individual	Structure	Profession	Professional	Knows about each other	Multiple-choice questions, self-assessment questionnaire, self-assessment
Team	Function	Team competency	Quality indicators	Knows how to work together as a team	Problem-based learning, on-line modules, interprofessional education global rating scale, National Institute of Mental Health's 4 competency domains, 360-degree formative assessment
Task	Outcome	Team performance	Patient effectiveness	Shows how the task is completed	Objective structured clinical examination, interprofessional team objective structured clinical examination, direct observation of practice

Adapted from Simmons et al. Assessment of interprofessional education: key issues, ideas, challenges and opportunities. In: Wimmers PF, Mentkowski M, editors. Assessing competence in professional performance across disciplines and professions. Cham: Springer International Publishing; 2016. p. 237-52 [19].

in entrustable professional activities [19]. The model identifies key elements of IPE assessment in a matrix (Table 1), including the purpose of the assessment, who will be assessed, what needs to be assessed, and how the assessment will be undertaken. Multidimensional assessment tools are consolidated in the assessment matrix for 3 different domains: structure/role (individual), function/responsibility (team), and outcome/relationship (task). In addition, an assessment blueprint is recommended in the model to ensure that relevant IPE competencies are examined in all 3 domains.

There are some important considerations in the assessment matrix. First, Miller's pyramid of learning principles [26] is still applicable to individual team members, showing the learning trajectory from the cognitive domain ("knows" and "knows how") to the behavioural domain ("shows how" and "does") (Figure 1). Individual team members are subjected to assessments evaluating their competency or capability to progress in interprofessional teamwork. Second, the assessment matrix

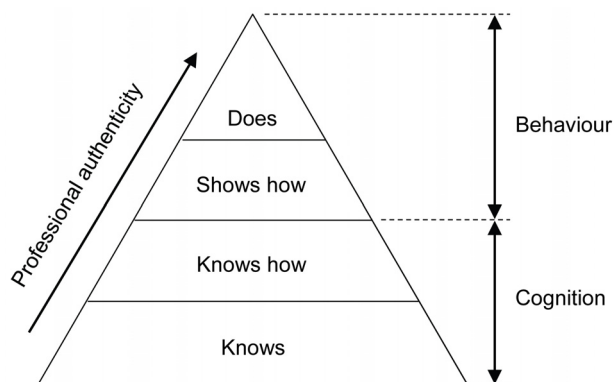


Figure 1. Miller's pyramid of learning principles.

includes team-based competencies, such as knowledge (roles and responsibilities of other professionals), skills (communicating, relating, and reflecting), and attitudes (respect, trust, ethical values, willingness to collaborate and cooperate). Third, task-level outcomes are measured, which helps team members and educators to identify the required competencies for each profession to contribute to the completion of the task.

A task-specific blueprint aligns the assessment with the learning objectives and ensures that all collaborative competencies are covered in the IPE activities. The assessment blueprint determines the expected outcome or task completion for the team. In the blueprint, different methods can be employed to assess competencies. Tables 2-5 provide examples of assessment blueprints for the team management of stroke patient discharge. The interprofessional team consists of doctors, nurses, physiotherapists, occupational therapists, speech therapists, and other health care professionals. For the assessment of the structure, each individual team member needs to understand the roles and responsibilities of their own professions, as well as their relationships with patients and caregivers (Table 3). For example, physiotherapists should be aware of their role of understanding the movement disorders that accompany stroke and their responsibilities of performing assessments, determining physical limitations, and providing treatment for patients. When the assessment moves to the function of the team, each individual team member needs to understand the roles, responsibilities, and relationships of other professions (Table 4). At the level of outcome assessment, the necessary roles, responsibilities, and relationships for completing the task are defined (Table 5). Each professional should understand the progress of the disease, the requirements for discharge, and how they can contribute to the

Table 2. Example of an assessment blueprint

Composition	Structure			Function			Outcome		
	Professional identity			Competency identity			Performance identity		
	Knowledge	Skills	Attitudes	Knowledge	Skills	Attitudes	Knowledge	Skills	Attitudes
	Role	Responsibility	Relationship	Role	Responsibility	Relationship	Role	Responsibility	Relationship
Nurse									
Doctor									
Physiotherapist									
Occupational therapist									
Speech therapist									
Others									

Adapted from Simmons et al. Assessment of interprofessional education: key issues, ideas, challenges and opportunities. In: Wimmers PF, Mentkowski M, editors. Assessing competence in professional performance across disciplines and professions. Cham: Springer International Publishing; 2016. p. 237-52 [19].

Table 3. Example of an assessment blueprint for the team management of stroke patient discharge for individual team members, linked to professional identity

Composition	Structure=individual team members		
	Professional identity		
	Knowledge	Skills	Attitudes
	Role	Responsibility	Relationship
Nurse	Understand the role of nursing care of stroke patients	Take blood pressure, heart rate, medication, feeding and dressing	Relationship to patient and caregiver
Doctor	Understand the pathology of stroke and test results	Perform assessment and provide medication and treatment plan	Relationship to patient and caregiver
Physiotherapist	Understand the movement disorders accompanying stroke	Perform assessment, determine physical limitations, and provide treatment	Relationship to patient and caregiver
Occupational therapist	Etc.		
Speech therapist			
Others			

Table 4. Example of an assessment blueprint for the team management of stroke patient discharge for team function, linked to competency identity

Composition	Function=interaction with the team		
	Competency identity		
	Knowledge	Skills	Attitudes
	Role	Responsibility	Relationship
Nurse	Understand the role of other team members	Communication, teamwork, implement clinical care path	Collaboration, ethical values
Doctor	Understand the role of other team members	Communication, teamwork, implement clinical care path	Collaboration, ethical values
Physiotherapist	Understand the role of other team members	Communication, teamwork, implement clinical care path	Collaboration, ethical values
Occupational therapist	Etc.		
Speech therapist			
Others			

Table 5. Example of an assessment blueprint for team management of stroke patient discharge for the outcome, linked to performance identity

Composition	Outcome=completion of task		
	Performance identity		
	Knowledge	Skills	Attitudes
	Role	Responsibility	Relationship
Nurse	Understand the progress of the disease and nursing needs for discharge	Prepare patient for discharge and follow-up	Collaboration with caregiver and other external agencies
Doctor	Understand the progress of the disease and readiness for discharge	Provide patient with advice and medication care plan for discharge	Collaboration with caregiver and other external agencies
Physiotherapist	Understand the progress of the disease and functional independence needs for discharge	Provide patient with home exercises and ambulatory instructions for discharge	Collaboration with caregiver and other external agencies
Occupational therapist	Etc.		
Speech therapist			
Others			

completion of the task. For instance, the responsibility of physiotherapists is to provide patients with home exercises and ambulatory instructions for discharge.

The integrated and structured assessment blueprint is task-specific and can be flexibly adapted to different IPE activities, responding to many of the challenges faced in IPE assessment.

This is a potentially useful model to consider, as it addresses a gap in IPE and learning experiences by examining competencies in different domains in terms of team structure, team function, and outcomes. However, many assessment methods in the blueprint are subjective and resource-intensive, meaning that careful planning is required. Further studies are needed to evaluate

the usefulness of this model in IPE assessment.

CONCLUSION

In this paper, we outlined the benefits and current challenges related to IPE assessment. A multifactor model for IPE assessment from a recent study was briefly discussed. This model can generate helpful insights in the following ways. First, the variety of evaluation methods and tools in the assessment matrix ensures that educators choose the most appropriate tools to meet their examination goal. Second, the model can be used to examine team structure, the functions of the team, and outcomes. This paper took stroke patient discharge planning as an example to illustrate the assessment blueprints for a competency examination at the levels of individuals, the team, and the task. Further studies, both quantitative and qualitative, will be required to evaluate the effectiveness of this model as a means of IPE assessment.

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